

CLAIMS

We claim:

1. A fuel supply comprising:
an outer casing encasing an inner liner containing fuel,
5 a first valve component comprising a valve body and a slidable body disposed inside the valve body, wherein the slidable body is normally biased toward a valve seat surface to seal the valve component and wherein the slidable body can be moved away from the valve seat surface to open the valve component,
wherein the valve body is connected to an opening in the inner liner and the valve body
10 is connected to an opening in the outer casing.
2. The fuel supply of claim 1, wherein the valve body is press-fitted to the opening in the inner liner.
- 15 3. The fuel supply of claim 1, wherein the valve body is ultrasonically welded to the opening in the outer casing.
4. The fuel supply of claim 1, wherein the outer casing and the inner liner are made from different materials.
- 20 5. The fuel supply of claim 1, wherein the valve seat surface is located on the valve body.
6. The fuel supply of claim 5, wherein the slidable body is a plunger.
- 25 7. The fuel supply of claim 6, wherein an O-ring is disposed on the plunger.
8. The fuel supply of claim 1, wherein the valve seat surface is provided by a septum.
9. The fuel supply of claim 1, wherein the slidable body is a ball.

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10. The fuel supply of claim 1 further comprising an outer sealing member that provides a seal between the first valve component and a corresponding second valve component disposed to a device that uses the fuel.
- 5 11. The fuel supply of claim 9, the outer sealing member is an O-ring.
12. The fuel supply of claim 1, wherein the inner liner is attachable to the outer casing by a snap-fit.
- 10 13. The fuel supply of claim 1, wherein the inner liner comprises at least one barb to retain the inner liner to the outer casing.
14. The fuel supply of claim 1, wherein the first valve component comprises a filler or retaining material to regulate the flow of fuel.
- 15 15. The fuel supply of claim 1, wherein the retaining material is positioned in a spring retainer supporting a spring biasing the plunger.
16. A fuel supply for a fuel cell comprising
20 an outer casing encasing an inner liner containing fuel,
a first valve component comprising a valve body and a slidable body disposed inside the valve body, wherein the slidable body is normally biased toward a valve seat surface to seal the valve component and wherein the slidable body can be moved away from the valve seat surface to open the valve component,
25 wherein the inner liner is made from a fluorinated polymer.
17. The fuel supply of claim 16, wherein the fuel is methanol.
18. The fuel supply of claim 16, wherein the inner liner is made from a fluorinated low
30 density polyethylene.

19. The fuel supply of claim 16, wherein the inner liner is fabricated from low density polyethylene and fluorinated.

20. The fuel supply of claim 16, wherein the outer casing and the inner liner are made from
5 different materials.

21. The fuel supply of claim 18, wherein the outer casing is made from a material selected from a group consisting of low density polyethylene, high density polyethylene, acetal polyoxymethylene, polypropylene, polyethylene terephthalate, polyethylene naphthalate,
10 nylon, metals, and blends thereof.

22. A fuel supply for a fuel cell comprising
a liner member containing methanol,
a valve component comprising a valve body member and a slidable body member
15 disposed inside the valve body member, wherein the slidable body member is normally biased toward a valve seat surface to seal the valve component and wherein the slidable body member can be moved away from the valve seat surface to open the valve component,
wherein the liner member, the valve body member, and the slidable body member are
made from at least two different materials and wherein at least one of the members is
20 compatible with methanol.

23. The fuel supply of claim 22, wherein said at least one of the members comprises fluorinated polymer.

24. The fuel supply of claim 23, wherein the fluorinated polymer is fluorinated polyethylene.
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25. The fuel supply of claim 23, wherein said at least one of the members is the liner member.
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26. The fuel supply of claim 22, wherein said at least one of the members comprises a laminate having at least two layers.
27. The fuel supply of claim 26, wherein said at least two layers are selected from a group
5 consisting of polypropylene, polyethylene, ethylene vinyl acetate, fiber glass, microglass and polytetrafluoroethylene.
28. The fuel supply of claim 26, wherein said at least one of the members is the liner member.
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29. The fuel supply of claim 22, wherein said at least one of the members comprises a material selected from a group consisting of acetal polyoxymethylene, polyethylene, polypropylene, polyethylene terephthalate, and stainless steel.
30. The fuel supply of claim 29, wherein said at least one of the members is the valve body member.
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31. The fuel supply of claim 22, wherein said at least one of the members comprises a material selected from a group consisting of stainless steel and thermoplastic elastomer.
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32. The fuel supply of claim 31, wherein said at least one of the members is the slidable body member.
33. The fuel supply of claim 22, wherein the valve component further comprises a sealing
25 member made from ethylene propylene diene methylene terpolymer.
34. The fuel supply of claim 22, wherein the valve component further comprises a sealing member made from a material selected from a group of polymers consisting of fluororubber, fluorosilicone rubber, nitrile rubber, hydrogenated nitrile rubber, a mixture of acrylonitrile-
30 butadiene rubber and polyvinyl chloride, a mixture of fluororubber and fluorosilicone, acrylic rubber, and silicone rubber.

35. The fuel supply of claim 34, wherein the fluororubber is selected from a group consisting of vinylidene fluoride-hexafluoropropylene rubber, tetrafluoroethylene-propylene rubber, tetrafluoroethylene perfluoromethyl vinyl ether rubber, vinylidene fluoride-
5 hexafluoropropylene-tetrafluoroethylene rubber.
36. The fuel supply of claim 22, wherein the valve component further comprises a sealing member made from a material selected from a group of polymers consisting of tetrafluoroethylene-hexafluoropropylene-vinylidene fluoride, polytetrafluoroethylene,
10 tetrafluoroethylene-perfluoroalkoxy ether copolymer, a tetrafluoroethylene-hexafluoropropylene copolymer, ethyne-tetrafluoroethylene copolymer and polyvinylidene fluoride, polyamide resins, and polybutylene terephthalate and polyethylene terephthalate.
37. The fuel supply of claim 22, wherein the valve component further comprises a sealing
15 member made from a material selected from a group of polymers consisting of styrene-butadiene rubber, butadiene rubber, isoprene rubber, natural rubber, low-nitrile rubber, ethylene-propylene-diene rubber, butyl rubber, silicone rubber and phosphonitrilefluororubber, epichlorohydrin rubber, nitrile rubber, chloroprene rubber, urethane rubber, fluorosilicone rubber, hydrogenated nitrile rubber, chlorosulfonated
20 polyethylene rubber, chlorinated polyethylene rubber, chlorinated butyl rubber, brominated butyl rubber, acrylic rubber, a mixture nitrile rubber and ethylene-propylene rubber, fluoric synthetic rubber (with iodine and bromide bridging sites).
38. The fuel supply of claim 22, wherein said at least one of the members comprises
25 polyurethane with zinc borate.
39. The fuel supply of claim 38, wherein the zinc borate comprises about 3% to 30% of the polyurethane.
- 30 40. The fuel supply of claim 22, wherein said at least one of the members comprises ion-conducting polymer.

41. The fuel supply of claim 40, wherein the ion-conducting polymer is a poly(vinyl alcohol)-poly(styrenesulfonic acid).
- 5 42. The fuel supply of claim 22, wherein said at least one of the members is coated with a chromium-fluorocarbon composite.
43. The fuel supply of claim 22, wherein the valve seat surface is located on the valve body.
- 10 44. The fuel supply of claim 43, wherein the slidable body member is a plunger.
45. The fuel supply of claim 44, wherein an O-ring is disposed on the plunger.
46. The fuel supply of claim 22, wherein the valve seat surface is provided by a septum.
- 15 47. The fuel supply of claim 46, wherein the slidable body member is a ball.
48. The fuel supply of claim 22 further comprising an outer casing.
- 20 49. The fuel supply of claim 48, wherein the outer casing is made from a material selected from a group consisting of low density polyethylene, high density polyethylene, acetal polyoxymethylene, polypropylene, polyethylene terephthalate, polyethylene naphthalate, nylon, metals, and blends thereof.
- 25 50. The fuel supply of claim 22, wherein slidable body member is biased by a spring and the spring is compatible with methanol.
51. The fuel supply of claim 50, wherein the spring is supported by a spring support member and the spring support is compatible with methanol.

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52. The fuel supply of claim 51, wherein the spring support contains a porous filler, absorbent material or retention material.
53. The fuel supply of claim 22, wherein the valve component further comprises a porous
5 filler, absorbent material or retention material.
54. The fuel supply of claim 53, wherein the porous filler, absorbent material or retention material is located upstream of the valve component.
- 10 55. The fuel supply of claim 53, wherein the porous filler, absorbent material or retention material is located downstream of the valve component.
56. The fuel supply of claim 53, wherein the porous filler, absorbent material or retention material is located between the valve component and a corresponding valve component.

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